Micro Technology Unlimited

280010 WORDPIC

PRELIMINARY USER MANUAL

FOR MTU-130 COMPUTERS

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REV. A

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MICRO TECHNOLOGY UNLIMITED

"WORDPIC" WORD PROCESSOR FOR MTU-130 COMPUTERS

1. INTRODUCTION

The present standard software offered with the MTU-130 includes a powerful full-screen editor. Since it is primarily intended to be a program and data editor, it does not include some features commonly found in high quality word processing programs which facilitate the entry, editing, and printing of ordinary text. It is clear that a separate word processing program is needed, while retaining the standard editor in its present form. The desired functions relate primarily to entering, formatting and printing text. The underlying algorithm of the present editor for "in-place" editing of unlimited-length files has proven to be powerful and reliable. Therefore a word processor program is being made available as an optional product, using the file manipulation mechanism of the standard editor as a base.

2. FUNCTIONAL REQUIREMENTS

In order to exceed the performance of other microcomputer word processors, the MTU word processor includes features presently found in the best of them, and in addition includes capabilities which only the special MTU-130 hardware and software make possible. These special features include the extensive use of programmable function keys with displayed legends to reduce learning time, the ability to display special editing characters on the screen, and fast disk access for high performance and large capacity.

The MTU-130 word processor will permit true graphical and pictorial information to be merged with text and printed without manual intervention. The name WORDPIC was chosen to suggest this ability to handle both words and pictures.

The appearance of text on the display screen during editing very closely approximates the appearance of the final printed document. Editing text is accomplished primarily by direct manipulation of a cursor on the displayed text. This "full screen" approach to editing allows great flexibility in layout and rapid editing, using largely intuitive operations. Only functions which cannot readily be displayed on the screen (such as changing print pitch) are postponed until the actual printing of the document. Where embedded codes are necessary to control special printer functions, they will be displayed on the screen during editing as unique symbols indicative of their function, and can be edited in the same manner as other text.

NOTE: WORDPIC is a trademark of Micro Technology Unlimited.

2.1 FEATURE SUMMARY

The following features are included in the MTU-130 WORDPIC word processor:

1. Full screen editing format.
2. "Infinite-scroll" bidirectional operation on files of up to 1,000,000 characters.
3. 80 character displayed lines with ability to edit lines of up to 160 characters.
4. Full upper and lower case ASCII 128 character set displayed with descenders, plus special characters and entry of other character codes.
5. Bounce-free, interrupt-driven keyboard guarantees no loss of keystrokes and permits type-ahead.
6. Separate "cursor cross" key group with auto-repeat for rapid and accurate positioning on the screen, including diagonal movement.
7. Function keys with displayed legends eliminate need for memorizing extensive control-codes or time-consuming menus.
8. Automatic "word wrap" at all times, including during insertion.
9. Convenient INSERT key on main keyboard with "INSERT" status indicator display allows rapid insertion of characters or lines of new text.
10. DELETE key on main keyboard with auto-repeat after timeout allows rapid and accurate removal of text.
11. A single key justifies a paragraph on the screen.
12. Automatic left and right margins, variable within the document.
13. Automatic tabstops, variable within the document.
14. On-screen line centering with a single keystroke.
15. Global search for character string or line.
16. Global search-and-replace operation with or without operator "veto".
17. Search and search-and-replace can be limited to specified line and column ranges.
18. Multiple searches may be combined in a single command.
19. Number of repetitions can be specified for search-and-replace.
20. Multi-line block MOVE, COPY, DELETE, and SAVE/RECALL.
21. RECALL key allows recovery of an accidental deletion.
22. Frequently needed text can be easily saved and recalled whenever desired.
23. External files may be merged into the file being edited.
24. Blocks of text may be saved on other files, or printed.
25. Eight macros allow user to define multiple editing functions as one key.
26. Unique displayed embedded codes for special printer functions:
    a. Underlining*
    b. Subscripts*
    c. Superscripts*
    d. Bold print*
    e. Wide characters*
    f. Printer pause
    g. Special characters (Greek, math symbols, etc.)*
27. Printing of pica, elite, proportional and compressed pitch sizes, variable within the same document.*
28. True flush-right proportional print, proportional-spaced printing for "typeset" appearance*.
29. Ability to print figures, diagrams, and other graphics intermixed with text.*
30. Multicolumn printing, multipass printing, and text-beside-figure capability.
31. Global margin offset for printing can be specified in inches.
32. "Reverse indent" onscreen justification for outlines, etc.
33. A user-friendly accessing program, WORDSHELL, allows WORDPIC to be used as a stand-alone word processor.

*Note: Requires supported printer capable of this function.

3. OPERATIONAL DESCRIPTION

3.1 PROGRAM STARTUP

WORDPIC is normally initiated by typing a command from the CODOS operating system monitor. Alternatively, it can be entered automatically on power up for dedicated word processing operations by including the command in the STARTUP file for the MTU-130. This command has the form:

WORDPIC [⟨filename⟩ [⟨linesize⟩]]

If the filename argument is omitted, WORDPIC will prompt:

EDIT WHAT FILENAME?

The linesize argument specifies the largest right margin which can exist in the document. If no linesize argument is given, the default linesize of 80 characters will be used for a new document. For an existing file, the linesize which was specified when the document was created will be used as the default. The program then prompts:

PLEASE ENTER NAME OF BACKUP FILE (RETURN = NONE)?

If no backup file is desired, simply press carriage RETURN. Entering a file name will cause the file to be copied to the specified file for backup purposes. If a name is specified which already exists, the program prompts:

BACKUP FILE ALREADY EXISTS. OVERWRITE IT (Y/N)?

A "Y" reply will overwrite the file. A "N" reply will return control to CODOS.

3.2 DISPLAY SCREEN

WORDPIC divides the CRT display screen into three areas. The top three lines of the screen are the Command/Status Area (CSA). This area is used for entry of certain commands, display of status indicators, and display of prompting and error messages.

The CSA is separated from the rest of the display by a full-width horizontal line. This line is used as the tabstop display line. It displays a "tic" mark at each position where a tabstop is currently active.

Below the tabstop display line is the text window. This area is 20 lines of 80 characters each. The text window displays the text being entered or edited. It can be freely "moved about" to display any 20 lines of the file. A blinking rectangular cursor indicates the current point of interest in the text window. Text will be entered at this point when keys are pressed on the keyboard. The cursor can be easily moved about inside the text window by using the five cursor control keys in the "cursor cross" to the right of the main key array.

The bottom line of the CRT contains two groups of four rectangular boxes, each with a label of up to eight characters inside the box. These boxes are the function key legends, and change as required during program execution. Each box is associated with the function key immediately below it on the keyboard. For example, if the leftmost rectangle is labelled "FIND", then the leftmost function key on the keyboard performs the "FIND" function. The current state of the eight function keys is called the Current Menu.

3.2.1 CSA ORGANIZATION

The three-line Command Status Area is divided into a command line, a title/error pointer line, and a status/message line.

The top line is normally blank and is used to display operator commands which are not part of the actual text of the document. For example, a CHANGE command to perform a search-and-replace operation will require entry of the string to search for.

The second line of the CSA normally displays the MTU program title and copyright notice:

WORDPIC 1.0 Copyright 1982 MTU

If an error is made in a command, this line is temporarily replaced with an "up arrow" indicating the location of the error in the command.

The third line of the CSA normally displays the present status in the following form:

```
File=YOURFILENAME:0   INSERT                    Col= 23  Line= 2347  Top= 2340
```

The INSERT status indicator will be visible only when the INSERT key has been depressed, and is shown highlighted in reverse video. The three numbers on the right hand side indicate the current column and line number the cursor is on in the text window, and the line number currently displayed at the top of the text window. These numbers change automatically as the cursor is moved. Line numbers are adjusted automatically when lines are deleted or inserted. There are no line numbers displayed in the text window itself. In the event of an error condition, the left portion of the line will be temporarily overwritten with the error message. When the operator acknowledges the error message by depressing RETURN, the normal status display is restored.

3.2.2 TEXT WINDOW ORGANIZATION

The text window displays 20 lines of up to 80 characters each. It represents a "window" into the file and can be "moved about" to display any 20 contiguous lines of the file. A blinking cursor indicates the current position in the file.

If the maximum line length is specified as greater than 80 characters when the word processor is entered, then lines will be displayed in "landscape mode". In landscape mode, two display lines are used to display one line of the file. Therefore 10 lines of the file are displayed at once instead of 20. If a given line contains less than 80 characters, it will still occupy two full display lines, with the second display line being blank. All editing operations can be performed on landscape mode lines just as for regular lines, including insertion, deletion, centering, etc. When lines entered in landscape mode are printed, they will be printed full width (assuming the printer can accept lines greater than 80 characters in length).

3.3 ENTERING TEXT

To enter text, you simply type in the normal manner while the cursor is in the text window. Depressing carriage RETURN will cause the cursor to advance to the next line starting at the left margin. If the right margin is reached while typing a word, the whole word will automatically be "wrapped" to the left margin of the next line, so that no words will be broken. If the cursor reaches the bottom of the 20 line display, the text window will automatically scroll up by one line. The top line displayed will disappear off the top of the screen (but will still be in the file), and a new blank line will appear at the bottom of the screen. This process can be repeated indefinitely. If very large amounts of text are entered (several hundred lines), the disk may be accessed momentarily at the end of a line. However, no characters will be lost and the operator can continue text entry during the disk access, which will typically last about a second. The keyboard is interrupt driven, supporting type-ahead of up to 256 characters.

3.3.1 MANEUVERING THE CURSOR AND THE TEXT WINDOW

The five cursor control keys located in the cursor cross to the right of the main keyboard can be used to move the cursor in the text window. The left, right, up and down arrows will move the cursor in the indicated direction. The HOME key will move the cursor to the upper left-hand corner of the text window. The four directional keys will repeat after a short delay if held down. You may hold down more than one cursor key at once and the resulting cursor motion will be a combination of the individual key motions. Diagonal cursor motions are therefore easily accomplished. If the shift key is held down and cursor-left is pressed, the cursor moves to the left margin. Shift-cursor-right jumps the cursor to the last existing character of the line. The backspace key operates the same as the cursor left key. Depressing cursor-down at the bottom of the text window will cause the text window to scroll up by one line. It will not advance beyond the end-of-file position. Carriage return can be used to add blank lines to the end of a file. Pressing cursor-up at the top of the display will cause the text window to "back up" one line. It will not backup beyond the beginning of the file. Holding down shift and depressing cursor-down will advance the text window to the next 20 lines of the display. Similarly, shift/cursor-up will backup by 20 lines. This is called paging through the file. Any time the cursor or display changes position, the status area of the CSA will automatically be updated. Shift/home returns to the beginning of file.

3.3.2 OVERSTRIKE TYPING

Existing text may be changed by simply overtyping with the desired text. The new characters will replace the old on the screen.

3.3.3 DELETING AND INSERTING CHARACTERS

The most common typing errors which are discovered immediately after depressing a wrong key can be fixed by using RUBOUT, which replaces the previous character with a blank and leaves the cursor at the position of the removed character. RUBOUT differs from backspace in that it erases a character each time it is pressed, whereas backspace moves the cursor without erasing.

Characters may be deleted by pressing the DELETE key on the main keyboard while the cursor is over the character to be removed. Any remaining text to the right of the cursor on the line will be "pulled over" automatically to close up the void. Holding down the DELETE key will cause repeated deletions. This makes it easy to delete whole words, etc. To prevent deleting more than was intended, type-ahead is suppressed for deletions. If the deletion is sufficiently large to make it

desirable to "pull up" text from following lines to fill out the end of the line, this may be done by using the JUSTPARA function key (discussed later). Note that unlike the DELETE key, the space bar replaces characters with blanks and any remaining text to the right of the cursor will not be "pulled over". In addition, the JUSTPARA operation recognizes blanks as characters and will not remove them.

To insert characters between existing characters, the cursor is moved to the desired position and the INSERT key on the main keyboard is pressed. The CSA INSERT status indicator will light indicating insert mode. Typing a character in insert mode will cause the character to be inserted to the left of the current cursor position. All characters to the right will automatically shift one position to the right. If there is not room enough to complete the insertion on the current line, the words to the right will automatically wrap to a new line below the present line to make additional room. Typing in insert mode can be continued indefinitely. Additional lines will be inserted automatically as necessary. Depressing RETURN or any cursor movement key or backspace will exit insert mode and extinguish the INSERT indicator in the Command/Status Area. However, the RUBOUT key will not exit insert mode so as to allow simple corrections while in insert mode.

3.3.4 DELETING AND INSERTING LINES

Holding down SHIFT and depressing DELETE will delete the line the cursor is on. Lines following will automatically "close up" the space. To cancel the current line without closing up the gap, the CTRL key should be held down and X depressed. CTRL-X cancels the current line but leaves a blank line to type on. SHIFT-DELETE will repeat after a brief delay if held down. A line deleted by shift-delete is saved temporarily in a special buffer and can be recovered using the RECALL key (described later).

SHIFT-INSERT will insert a blank line above the line the cursor is currently on and move the cursor to the new blank line. This key also repeats after a brief delay for easy insertion of several blank lines.

3.4 PARAGRAPHS

A paragraph is one or more lines of text terminated by an end of paragraph break. Holding down SHIFT and pressing RETURN will generate an end of paragraph break after the line the cursor is presently on. This end of paragraph break will take the form of a line which is blank except for a special paragraph break character in column one of the display line. This character looks like a backwards "P", the standard editing mark for a paragraph break. The cursor will move to the left margin of the line after the break line. The paragraph break is used primarily to control justification of text between the margins. In addition, paragraphs may have optional attributes such as new margins, a different type pitch, etc. The paragraph break line can also be used to specify these attributes (explained later). When the document is printed out, the paragraph break line will not be printed, but its attribute specifications, if any, will affect the format of subsequent text. The paragraph break line can be edited just like any other line of text. Therefore deleting a paragraph break line using SHIFT-DELETE can be used to combine two paragraphs into one. There are also tabstop, page, and figure break lines (described in section 3.6). These break lines are equivalent to a paragraph break.

3.4.1 MARGINS

Left and right margins are initially set at 1 and 80 respectively and will default to this. Margins are easily reset by specifying the new values desired on the paragraph break line (described in section 3.6.2). Margins may be set to

create a column as narrow as 3 characters wide. Once margins are set, they will stay in effect from the break line until the end of the document or until new margins are specified on another paragraph break line.

3.5 FUNCTION KEYS AND COMMANDS

The eight function keys above the main keyboard array can be used to issue various commands to WORDPIC. The function key legends at the bottom of the CRT show the commands which are currently available. Some function keys perform the indicated command immediately when depressed. Other function keys will require additional information before being executed. Some function keys trigger a "secondary" menu of different functions and legends. When WORDPIC is entered, the initial menu of function keys is:

JUSTPARA	FIND	MARK	CHANGE	TAPSTOP	PRTRCODE	CENTER	OTHER

This is the main menu. Depressing the OTHER function key (F8) will immediately display the alternate main menu of less-frequently needed functions:

RECALL	FIND	MACRO	FIGURE	NEWPAGE	UPDATE	QUIT	OTHER

The FIND key is repeated for convenience since it is frequently needed. The OTHER function key will restore the main menu. The MARK and PRTRCODE function keys will cause secondary menus to appear in place of the current legends. The blank function keys in the MARK and PRTRCODE secondary menus are reserved for possible future enhancements. The MARK command has its own tertiary submenu. These submenus are described later.

3.5.1 FIND COMMAND

The FIND function key commands WORDPIC to search for a specified line number or character string. Line numbers for a file start with line 1. The line numbers are not part of the file itself. WORDPIC keeps track of its position automatically and the line number associated with any line changes automatically as lines are inserted or deleted above it.

The FIND command can position the text window rapidly to any position in the file because it does not display the file as it searches. You can move the text window either forward or backward to any specified line. The FIND command is started by pressing the FIND function key. WORDPIC will display the word "FIND" on the top line of the Command Status Area followed by a blinking cursor. You may then type in the rest of the command, terminated by a carriage RETURN. The simplest form of the FIND command is:

FIND ⟨linenumber⟩

which will display the specified line number as the first line of the text window. For example:

FIND 85

will display lines 85 through 104 of the file in the text window (lines 85 through 94 in landscape mode). If a number is specified which is larger than the last line of the file, the last line of the file will be displayed instead. Alternatively, you may specify a displacement from the line number the cursor is presently on by using a signed numeric argument. For example:

FIND +11

will advance the display by eleven lines from the second line number displayed at the right of the CSA:

FIND -100

will backup 100 lines from the present display position. If you attempt to backup beyond line 1, line 1 will be displayed at the top of the text window.

In addition to searching for line numbers, the FIND command can also search for a specified character string. This form of the FIND command is:

FIND "⟨string⟩" [([⟨linelimit⟩] [⟨columnlimits⟩])]

where string is the desired character string. The string must be enclosed in either a set of single or double quotes. The string can include blank characters and can be as long as you can type on the command line. The search for the string is always begun from the current cursor position in the text window rather than from the first line of the display. The search will be continued until the specified string is found or the end of the file is reached. If the end of the file is reached, the message "NOT FOUND" will be displayed. For example:

FIND "this"

will search forward from the current line until the four characters "this" are found in the file. The text window will show this line at the top of the display, and display the cursor on the first character of the matching string. If the string is not found, the text window will not change and the message "NOT FOUND" appears.

You can also limit the search. This is done by specifying the optional line limit or column limit arguments in parenthesis. You can specify the last line number to be searched in the file. For example:

FIND "solar device" (150)

will only search from the present cursor position up to line 150 for the string. The line limit specified must be beyond the present position or you will get an "ILLEGAL ARGUMENT" error message. You may also specify a positive displacement from the present position in a limited search. For example:

FIND "solar device" (+200)

will limit the search to the next 200 lines starting at the current line.

Column limits may be specified too. For example:

FIND 'WRITE' (C1)

directs WORDPIC to find the string "WRITE" starting exactly in column 1.

FIND 'JSR' (C8-17)

limits the search to strings starting in columns 8 through 17 inclusive.

FIND ';'(+100 C 35-)

searches for a semicolon anywhere from column 35 to the end of line in the next 100 lines. You must specify the "C" prefix to indicate a column limit, and if both

column and line limits are given, the line limit must be given first.

Multiple string or line arguments may be "strung together" on a FIND command. For example, if you are presently at line 200 and wish to search for a string starting with line 1, you can do it with a single FIND command:

```
FIND  1  "100"
```

This moves the text window to line 1, without redisplaying it, and then searches forward for the string "100". This would be a way to search for a number inside a document.

For normal files WORDPIC will complete FIND commands almost instantaneously. For a large file (several thousand lines) WORDPIC may take a few seconds to complete the command as it accesses the disk. Occasionally you may discover that you typed in the wrong string before WORDPIC finishes its search. You can abort a string search by using the BREAK key. The display will be updated to whatever point WORDPIC was at when the BREAK occurred.

3.5.2 MARK COMMAND

The MARK command is used to designate blocks of text to be deleted, copied, moved, or saved. Pressing the MARK key will initiate the MARK secondary menu:

FIND		LINE				ACTION	CANCEL

The MARK secondary menu contains several blank function keys which are reserved for future enhancements. Depressing LINE will cause the line the cursor is on in the text window to be highlighted in reverse video. This line is now marked. If the cursor is moved to a different line and LINE is pressed again, all the lines between the first marked line and the second marked line inclusive will be highlighted. This constitutes a block of text. Either the first or last line may be marked first. The CANCEL key can be used to cancel the marking operation (restoring normal video) and return to the main menu without action. To mark large blocks, the FIND key may be used to reposition the display between MARKs.

Depressing the ACTION key displays the submenu of block actions:

MARKMORE	FIND	DELETE		COPY	MOVE	SAVE	CANCEL

The MARKMORE function key simply returns you to the previous MARK menu for marking additional lines before performing the desired action. The DELETE key removes the marked block, saving the deleted block in the recovery buffer. If the block is too large to save in the recovery buffer, WORDPIC will display the warning message:

```
WARNING.  THIS BLOCK IS TOO BIG TO RECALL.  DELETE IT (Y/N)?
```

Entering a "Y" reply deletes the block. An "N" reply cancels the action, leaving the text marked. The CANCEL key can then be used to cancel the marking operation if desired or, the block may be saved by writing it to a file using the SAVE function key.

Before using the COPY or MOVE function keys, the cursor should be moved to the desired destination for the copy or move. The block will be inserted above the line that the cursor is on. The FIND key can be used to locate the destination for the COPY or MOVE if desired. Pressing the COPY or MOVE function key will complete

the function and return to the main menu. COPY differs from MOVE in that MOVE deletes the original block and COPY does not. The destination for a COPY or MOVE must be outside the marked block.

The SAVE function key can perform several functions and requires completion of the command by typing on the command line. If a numeric argument between 1 and 8 is specified on the SAVE command, then the marked block is "attached" to that number and can be subsequently brought back with a RECALL command specifying the same number. The saved block is saved in a special dedicated disk file called WORDPICSAVES.Z on the same disk as the file being edited. Therefore saved blocks can be recalled in another editing session, even after the computer has been turned off. The WORDPICSAVES.Z file is created automatically on a disk if it does not already exist. Saving two blocks of text using the same save number overwrites the previously saved text for that number. If the marked block is too large to SAVE (greater than about 3000 characters), an error message will be generated.

If a filename is given, then the marked text block is written to the specified file. If the file already exists, an error message will be generated and no output will be written. WORDPIC will not perform the write if there is not enough remaining disk space, but will give an error message. A device name can also be specified instead of a file. For example:

SAVE P

will output the marked block to the printer. However, it should be noted that this printed output will be a literal image of the marked block, and will not provide any of the special formatting features of the full WORDPIC PRINT program (described later).

After any action is completed on the MARK/ACTION submenu, the reverse video for the marked portion of the text is cancelled and the main menu is restored.

3.5.3 CHANGE COMMAND

The CHANGE function key on the primary menu is used to initiate global or limited search-and-replace operations. When this key is pressed, the word CHANGE will appear on the command line followed by the blinking cursor. You may then complete the command, terminating it with a carriage RETURN. The format of the CHANGE command is as follows:

CHANGE [⟨repeatcount⟩]"⟨string1⟩" [(⟨qualifiers⟩)]["string2"] [Y]

The only required argument is "string1", which is the string to be replaced. Either single or double quotes can be used to enclose the string, but must be the same on both "ends" of the string. Repeatcount is an optional argument defining the number of occurrences of the string to be replaced, defaulting to one. Qualifiers limiting the range of the search to certain lines or columns may be specified in the same manner as for the FIND command. These qualifiers must be enclosed in parentheses. "String2" is the string which is to replace "string1" . It does not have to be the same length as "string1". If the replacement string is long enough that it would cause the line to overflow the right margin when the substitution is made, word wrap insertion will be performed in the same manner as for normal text entry. When word wrap occurs during replacement, the display will be updated at that point and the CHANGE operation terminated if a multiple replacement operation is taking place. This gives the user an opportunity to justify the paragraph before proceeding with the replacements by entering CNTRL/B.

Normally as each string which matches "string1" is found, it will be highlighted in reverse video, and the prompting message:

CHANGE THIS STRING (Y/N/C=CANCEL)?

will be displayed. Replying with a "Y" will cause the change to be made immediately and the search continued (if multiple replacement was specified). Replying with an "N" will leave this occurrence of the string alone but continue looking for the next occurrence. Replying with a "C" will cancel the replacement operation at that point and leave the string intact. If the optional "Y" argument at the end of the command is specified, however, no prompt will be given and the number of occurrences of "string1" specified by repeatcount will be replaced immediately. To replace all occurrences of a string, simply specify a repeatcount which is very large. The command will terminate at end-of-file. The CHANGE command, like the FIND command, always begins searching from the current cursor location. Some examples of search-and-replace operations using CHANGE are:

CHANGE 'IBM' 'MTU'

replaces one occurrence of the string 'IBM' with 'MTU'.

CHANGE 5 "floppy disk" "flexible diskette" Y

replaces the first five occurrences of "floppy disk" after the present cursor location with "flexible diskette", without prompting for an operator "veto".

CHANGE 100 "***" (+250)

deletes up to 100 occurrences of "***", limited to the next 250 lines. Since no replacement string was given, the string will simply be deleted. A prompt will be issued before deleting each occurrence.

CHANGE "ain't" (c40-) "isn't"

will change one instance of the specified string provided it occurs at column 40 or greater of any line.

3.5.4 JUSTPARA FUNCTION KEY

When depressed, the JUSTPARA function key will "close up" the paragraph the cursor is in and redisplay in the text window in its new form. The paragraph being justified does not have to be entirely visible on the display and may be as large as desired. When a paragraph has been justified, each line contains as many words as possible without the use of hyphenation. The resulting text is justified "ragged-right". When the first word of a line is "pulled up" to join the end of the preceding line, one blank space is inserted. If the line being extended was terminated by ".", "?", or "!", then two blanks are inserted. Blanks within a line are not removed, since the normal operation of WORDPIC INSERT and DELETE keys does not cause extraneous blanks in midline. This allows the insertion of deliberate spacing wherever desired without resorting to "required space" codes.

3.5.5 PRTRCODE FUNCTION KEY

Depressing the PRTRCODE function key will display a secondary menu:

UNDERbeg	BOLD beg	WIDE beg	PAUSE

SUBSCRPT	SUPERSCR		MAINMENU

This menu will remain in effect until the MAINMENU function key is pressed, which redefines the current menu and returns you to the main menu. Pressing one of the other function keys will cause WORDPIC to embed a special, one-character code at

the present cursor location. This code will trigger a special printer function when the file is printed. When shown on the display, an embedded code displays a unique character suggestive of its meaning. The meaning of these codes is as follows:

"UNDERbeg" embeds a "begin underlining" code (\U). When the file is printed, this embedded code will not be printed but instead will trigger the printer to begin underlining. When the "UNDERbeg" function key is pressed, its displayed legend will immediately change to "UNDERend". Pressing function key F1 after embed a "stop underlining" code (U/) and change the legend for function key F1 back to "UNDERbeg". Therefore function key F1 alternately performs underline-on and underline-off when it is pressed. All text bracketed by the begin/end underline codes will be underlined.

The "BOLD beg" and "WIDE beg" function keys operate in a similar fashion. "BOLD beg" embeds a code (\B) which will cause the printer to begin printing in bold print until a "BOLD end" code (B/) is encountered. "WIDE beg" (W) causes the printer to begin printing in double-width letters until a "WIDE end" code (W/) is encountered.

The "PAUSE" function key embeds a "stop printer" code (|P) in the text. When the PRINT program encounters this code, it will temporarily suspend printing to allow a manual operation such as a change of forms, ribbon color, print wheel, etc. The operator can then resume normal printing.

The "SUBSCRPT" and "SUPERSCR" function keys are normally used for embedding codes for subscripts (↘) and superscripts (↗). A "SUBSCRPT" code will cause the printer to scroll the paper up by a half line. It will continue printing at this level until another "SUBSCRPT" or "SUPERSCR" code is encountered. To print a normal superscript, you would embed a "SUPERSCR" code before the superscript and a "SUBSCRPT" code after the superscript (to return to the normal line) . "SUBSCRPT" and "SUPERSCR" do not have begin/end suffixes on the function key since they are complementary. It is therefore possible to "nest" any number of sub or superscripts so that complex mathematical formulas can be printed. A subscript and superscript can be placed on the same symbol by embedding a backspace (press ESCAPE and then BACKSPACE) in conjunction with subscripts and superscripts.

Embedded codes can be freely inserted and deleted in the same manner as any other character. The displayed codes are unique from any other characters and are therefore unmistakable. Embedded codes are displayed on the CRT for easy editing, but are not printed on paper. Any simultaneous use of multiple embedded code operations is permitted.

3.5.6 CENTER FUNCTION KEY

The CENTER function key centers the line the cursor is currently on in the text window, between the current margins. The CENTER command will correctly center for printing lines with embedded codes, including WIDE characters.

3.5.7 TABSTOP FUNCTION KEY

Depressing the TABSTOP function key will generate a tabstop break line <u>above</u> the line the cursor is currently on. A tabstop break line is used to set or clear tabstops. The tabstop break line contains a unique character (▶) in the first column identifying it as a tabstop break line, and is otherwise blank when created. To set a tabstop, position the cursor to any position on the tabstop break line except column one and depress any printable key. A tabstop is now set in that column, which will be in force anywhere below this tabstop break line (up to another tabstop break line). The tabstop display line at the bottom of the CSA always displays tic marks at the positions where tabstops are currently in effect.

Tabstops may be set or cleared by editing the tabstop break line in the usual fashion. Any number of tabstops may be set on a tabstop break line.

The TAB key (on the main keyboard) advances the cursor to the next tabstop. If no more tabstops are set on the present line, no action takes place. TABs are expanded as necessary into the appropriate number of blanks in the file being edited.

3.5.8 NEWPAGE FUNCTION KEY

The NEWPAGE function key (on the alternate main menu) inserts a page break line before the line the cursor is presently on. This page break line is similar in purpose to the paragraph break line (SHIFT-RETURN) previously discussed. The page break line will be displayed as a blank line except for a unique character (↧) in the first column identifying it as a page break line. When the file is printed, the page break line will cause the printer to advance to a new page. The page-break line itself will not be printed. Page attributes may be specified on the page break line. These are discussed later. Page break lines may be edited just like other lines. The primary main menu operation is restored after completion of this command.

3.5.9 FIGURE FUNCTION KEY

The FIGURE function key is used to insert a figure break line above the line the cursor is presently on. The figure break line contains a unique character (⊡) in column one identifying the line as a figure break line, and will otherwise be blank. The figure break line is not printed when the file is printed, but is replaced by the called for graphics image file. The graphics image is stored as a separate file. The figure break line attributes (discussed later) tell the printer which file to print. The figure break line can be edited just like any other line. The primary main menu operation is restored after the completion of this command.

3.5.10 MACRO FUNCTION KEY

The MACRO function key is used to "teach" WORDPIC a "new" command as a sequence of keystrokes. It is discussed later. The primary main menu operation is restored after the completion of the macro definition.

3.5.11 RECALL FUNCTION KEY

The RECALL function key is a multi-purpose function key which requires the operator to complete by typing on the command line. If no arguments are specified, then the RECALL key will cause the last line or block deletion to be recalled above the present cursor location. If a number between 1 AND 8 is given as the argument, then the line (or lines) associated with that number by a previous SAVE command is inserted at the present cursor location. If a filename is specified instead, then that file is merged into the file at the present cursor location. The primary main menu operation is restored after completion of the RECALL function.

3.5.12 UPDATE FUNCTION KEY

WORDPIC operates using a unique proprietary editing process which allows a file to be edited in place, without resorting to scratch files or special file formats. During the editing process, part of the file is maintained in memory buffers and part is maintained in the disk file itself. As the editing session progresses, parts of the file are updated on disk and new text is brought into memory from disk. The UPDATE key causes all modifications to be written to disk so that the disk copy of the file accurately reflects the state of all operations at that point. The UPDATE key may be used periodically during lengthy editing sessions to

help guard against ill effects due to a power failure, brownout, or similar problem which might shutdown the computer.

3.5.13 QUIT FUNCTION KEY

The QUIT key is used to exit WORDPIC. WORDPIC updates the disk to reflect all editing operations performed on the file, restores the normal display format and the function key legends which were in effect when WORDPIC was entered, and exits to the CODOS operating system. This is the only correct way to exit WORDPIC. Exiting by pressing INTERRUPT or RESET will leave the file in an undefined state if any modifications have been made during the edit session.

3.6 TABSTOP, PARAGRAPH, PAGE, AND FIGURE BREAK LINES

There are two main kinds of embedded codes for WORDPIC: single character codes and break line codes. The single character codes were described in section 3.5.5. These are displayed during operation of WORDPIC as single unique characters which indicate the function to be performed, such as "begin underline". These characters are displayed so that they can be inserted and deleted during editing, but trigger special operation when the file is printed.

Break lines are similar to the single character embedded codes, except that break lines occupy an entire line on the display instead of just one character. There are four different kinds of break lines, each identified by a unique symbol in the first position of the line: Tabstop (↦), Paragraph (¶), Page (⤓), and Figure (⊡). The reason that each of these codes occupies an entire line rather than a single character is that optional attributes may be specified on the break line. These attributes may affect the way the printer or the display operate after encountering the break line. Since break lines can be edited just like any other line, it is easy to alter attributes at any time. Attributes set on a break line remain in effect below the break line until the end of the document, or until another break line redefines the attributes. Break lines may be SAVEd and RECALLed in the same manner as other text. Break lines always begin in column 1 regardless of the current margin settings. Break lines that are placed inside a paragraph create two paragraphs. A break line cannot occur inside a paragraph.

3.6.1 TABSTOP BREAK LINE

The tabstop break line is generated by pressing the TABSTOP function key. It can be edited to define tabstops by placing any letter in each column where a tabstop is desired. The tabstop break line defines the tabstops in effect on all lines after it, up to the next tabstop break line (if any). When the cursor crosses a tabstop break line, the present tabstop positions are automatically redefined. If the cursor crosses the tabstop break line in the forward direction, then that tabstop break line defines the new tabstops in effect. If the cursor crosses a tabstop break line by "backing up", then the current tabstops will be set according to the previous tabstop break line. No noticeable time is required to update these tabstops no matter how far separated tabstop break lines are in the document.

Deleting a tabstop break line will cause the tabstops of the previous tabstop break line to take effect. If all tabstop break lines are deleted, then there are no tabstops in effect throughout the document. Inserting a tabstop break line in mid-paragraph is equivalent to inserting a paragraph break line followed by a tabstop break line.

3.6.2 END OF PARAGRAPH BREAK LINE

The paragraph break line is generated by SHIFT-RETURN. The end of paragraph break line will be generated below the cursor position, and the cursor will move to

the left margin of the line following the break line. Except for the paragraph break symbol in column one, the break line will be blank when initially created.

In addition to limiting the scope of justification performed by the JUSTPARA key, the paragraph break line can be used to specify attributes for the following paragraph. These attributes may be specified by adding optional arguments on the paragraph break line of the form ⟨keyword⟩ = ⟨value⟩. The "=" symbol is required. For example,

¶LEFT=10 RIGHT=62

sets the left margin for the paragraph(s) below to column 10 and the right margin to 62. The "¶" character above represents the paragraph break symbol. If a keyword is not specified on the paragraph break line, then the present value of the attribute (defined on some prior break line) remains in effect. The following keywords may be legally defined on a paragraph break line:

Keyword	Legal values assignable	Meaning
OFFSET	0 to 25.5	left margin offset in inches
LEFT	1 to 158 (defaults to 1)	left margin column number
RIGHT or RITE	3 to 160 (defaults to 80)	right margin column number
SPACING	0, 1, 1.5, 2, or 3 (defaults to 1)	line spacing
TYPE	PICA or 10, ELITE or 12, PROP, COMP, COND, 16, 17 (defaults to PICA)	type size
JUSTIFY	OFF, FLUSH, PROP, NONE (defaults to OFF)	printout justification method
REVINDENT or REVIND	0 TO 158	reverse indentation for use with JUSTPARA key
BACKUP	0 to 255	number of lines to backup

OFFSET only affects printing. It is used to specify an offset in inches from the absolute leftmost printable position of the print head to the location where column one is desired. For example, OFFSET=0.8 specifies that column 1 will be printed 0.8 inches to the right of the left extreme printable edge of the paper. OFFSET is normally the preferred way to set the effective left margin. All text will have the same offset regardless of the pitch of the type selected. The numeric value specified for offset will be rounded down to the nearest 0.1 inch. For example, OFFSET=6.88 is equivalent to OFFSET=6.8.

The left and right margins may be freely altered using LEFT and RIGHT keywords. These keywords affect both the way text is displayed on the CRT and the way it is printed in the final document. The magins for existing text can easily be changed by adding or modifying a paragraph break line above the text with new values for LEFT or RIGHT and then using the JUSTPARA key. This will funnel wider text into narrower margins or expand narrower text into wider margins.

The SPACING keyword sets the spacing between lines for single, double, triple space, etc. Setting SPACING to 0 allows overprinting of lines.

The TYPE keyword is used to select what pitch should be used on printers capable of different print sizes. The values assignable are PICA (10 characters per inch), ELITE (12 characters per inch), PROP (proportional width characters), COMP (compressed character, usually 16 or 17 characters per inch), and COND (condensed characters, usually 16 or 17 per inch).

The JUSTIFY keyword is used to select what mode of justification should be used

when the paragraph is printed. The value OFF specifies that the paragraph should be printed "as is", cancelling previously specified justification. The value FLUSH means that additional spaces should be embedded between words as needed in order to achieve flush-right justification of the final document. The value PROP means that characters should be proportionally spaced to achieve a flush-right margin. The value NONE is the same as specifying OFF. For a given printer, only certain combinations of attributes may be valid. (On an NEC 8023 printer, proportional justification can be used only with proportional type.) The JUSTIFY attribute only affects the way the paragraph is printed in final form. It does not affect the way the paragraph is displayed on the CRT or the way the JUSTPARA key operates.

The REVINDENT keyword is used to indent all lines of a paragraph, except the first, a specified number of columns relative to the left margin. For example, LEFT=5 REVINDENT=5 means that the left margin will be at column 5, the first line of the paragraph will begin in column 5, and all lines beneath the first line of the paragraph will start 5 more columns to the right at column 10 once JUSTPARA is pressed. The keyword affects both the way the text is displayed on the CRT and the way it is printed in the final document.

The BACKUP keyword can be used to specify the number of lines that the printer should backup for another print pass, for printers which have bi-directional paper feed. This keyword, in conjunction with the OFFSET keyword, can be used to print multiple columns of text, first one column and then the next. It can also be used to print text over or beside figures, or to print two or more figures side by side or superimposed. For example,

```
BACKUP=20 OFFSET=4.0
```

will backup the printer by 20 lines and cause printing to be performed 4 inches from the left edge. (Also see the discussion on BACKPAGE, section 3.6.4.)

3.6.3 FIGURE BREAK LINE

The figure break line is generated by depressing the FIGURE function key. The figure break line will be inserted above the line the cursor is currently on. The figure break line is used to insert a graphic pixel-block image into the final printed document in place of the figure break line. The following keyword attributes may be defined on the figure break line in a manner similar to the paragraph break line:

Keyword	Legal values assignable to keyword	Meaning
FILE	Any legal CODOS file name	File containing image.
REM	Any character string in quotes	Remarks
WIDTH	8 to 2040 (evenly divisble by 8)	Width of figure in dot columns
HEIGHT	1 to 2047	Height of figure in dot lines
OFFSET	0 to 25.5	Offset of figure in inches

For example:

```
⊡ FILE=FIGURE1.G REM="Flow chart for main program"
```

indicates that when the document is printed out, the file FIGURE1.G should be printed out as a graphics image in place of the Figure Break line. The "⊡" character represents the special figure break character. The REM keyword is used to begin a remark which is ignored on printout. The pixel image file to be printed

can be created in any way desired. Pixel blocks can be digitized photographs, graphic images created by the graphic editor (GREDIT), CRT images saved to disk, etc. The default parameters are a width of 480 dot columns by a height of 256 dot lines , the size of the MTU-130 screen image). Other size pictures can be specified using HEIGHT and WIDTH. The height and width attributes on the figure break line must match the height and width of the true figure as it was created. The printer must be capable of printing the specified width parameter. The file must be an MTU-130 standard loadable memory image.

The presence of a figure break line implies an end-of-paragraph break immediately above it even if none is physically present in the file. Therefore the contents of the figure-break line will not be affected by the JUSTPARA key.

3.6.4 PAGE BREAK LINE

The page break line is generated by depressing the NEWPAGE function key. The page break line will be generated above the line the cursor is on. The page break line will display a unique character in the first column and will otherwise be initially blank. The page break line will not be printed out on the final document, but instead will cause the printer to begin at the top of a new page. The following attributes may be specified in the same manner as described for the paragraph break line:

Keyword	Legal values assignable to keyword	Meaning
LPI	6 or 8 (defaults to 6)	Number of lines per inch
BACKPAGE	1 to 255	Number of pages to backup

These attributes do not affect the display on the CRT but only the final printed document. LPI specifies the number of lines per inch to be printed. The default is 6 lines per inch. BACKPAGE=1 is used to cause a reverse form feed to the top of the page just printed. This is useful for overprinting two or more columns of text on a page.

3.7 SPECIAL CHARACTERS

WORDPIC permits direct entry of all ASCII characters including control characters except HT (tab) and CR (carriage return). In addition, special characters outside the 128 character ASCII set may also be embedded. Any 8-bit code desired can be embedded in a line, except for the 16 hexadecimal codes F0 through FF, which are reserved for WORDPIC and cannot be embedded.

To embed a control character, the ESC key should be pressed followed by the key desired. If the key is a normal, displayable key, it will be displayed. If it is an ASCII control key, then a special character representing it will be displayed. This special character consists of two small hexadecimal digits displayed vertically in a single character cell. The two hex digits are the ASCII code for the key. For example, depressing ESC followed by CNTRL-B will display "02" vertically in the space normally occupied by one character, because hexadecimal 02 is the ASCII code for CNTRL-B. Codes for carriage RETURN and TAB cannot be embedded in this manner.

To embed a code for which there is no corresponding key, the PF1 key (on the top row of the numeric key pad) should be followed by two digits representing the hex code value desired. For example, PF1 followed by "D" and "8" will display the "D8" code in one character cell and embed a hexadecimal D8 byte into the file. This is normally used to trigger special printer characters or functions. Note that for this mode, only upper case alphabetic characters or numbers may be

entered. Otherwise, WORDPIC will "beep" and wait for a correct character. Embedded special characters can be edited in the same manner as other characters.

3.8 MACROS

A macro definition allows a series of up to 31 keystrokes to be associated with a number. Subsequently depressing the ENTER key followed by the macro number will cause the list of keystrokes to be processed by WORDPIC just as though they were entered from the keyboard. This facility effectively allows you to define "new" editing operations in terms of existing capabilities.

To define a macro, the MACRO function key should be depressed. The command should then be completed on the command line and be terminated by a carriage RETURN. The format for a macro definition is:

MACRO ⟨number⟩ " ⟨keystrokes⟩ "

where number is between 1 and 8 and is the macro number being defined. The keystrokes defining the macro must be enclosed in either single or double quotes, followed by a carriage RETURN. You may embed special keys in the macro definition using the ESC or PF1 keys. For example, to define a macro which inserts 3 spaces at column 2 of the next line, you could press the following sequence of keys:

OTHER MACRO 1 " ESC cursor-down ESC shift-cursor-left

ESC cursor-right ESC cursor-right ESC INSERT space space

space " RETURN

Subsequently depressing ENTER 1 will cause WORDPIC to advance the cursor to column 2 of the following line and insert three blanks.

Defining a macro which already exists redefines the macro. A macro may also invoke another macro or itself. If a macro invokes itself it will loop forever, until one of the following conditions occurs:

1. End-of-file is encountered during cursor-down.
2. Beginning-of-file is encountered during cursor-up.
3. An error condition occurs.
4. The BREAK key is depressed.

The BREAK key can be used to halt a "runaway" macro or to stop it manually at any desired point.

3.9 SPECIAL COMMANDS AND KEYS

The CNTRL-B key can be used at any time to recall prior commands typed on the command line. This is most useful for correcting minor errors and for repeating commands. Each time CNTRL-B is pressed, one previous line will be recalled. The memory buffer in which prior lines are saved is large enough to recall 10 to 20 average commands. When no more lines can be recalled, the CNTRL-B key will recall the most recently entered line again.

3.10 PRINT PROGRAM

A separate PRINT program is used to print WORDPIC files. The NEC 8023 printer is now supported, with additional printers to be supported later. PRINT reads the file created by WORDPIC and prints the text in the manner desired. The CODOS command to print the file is:

PRINT [⟨filename⟩ [⟨number⟩ [- [⟨number⟩]]]]

where filename is the name of the file to be printed. If no file is specified, the PRINT program will prompt the user for a file name. Number, which is optional, can be used to specify a page or range of pages to be printed. If omitted, the entire file will be printed. The first page of the file is page 1. A new page begins with each page break encountered in the file, regardless of the number of lines actually printed between page breaks.

```
PRINT WPTEXT.W
```

will print all of the file WPTEXT.W.

```
PRINT INFO.W:1 10-14
```

prints pages 10 through 14 of the file INFO.W on drive 1, and

```
PRINT LETTER_BILL.W  1
```

will print only the first page of the specified file. Appendix A is a sample of WORDPIC printed on an NEC 8023 printer.

Those of you who have the MTU-Assembler and others who wish to examine the details of PRINT may wish to look at BROWSE PRINT.A, the source program from which PRINT was assembled. You will find that the comments are quite complete in explaining each subroutine so that you may determine where any changes you may desire should be made. PRINT.A may also be viewed by using TYPE and EDIT. The following is a list of the embedded codes used by WORDPIC to indicate special functions:

HEXADECIMAL VALUE	MEANING
F0	Begin underline
F1	Begin bold
F2	Begin wide
F3	Printer pause
F4	End underline
F5	End bold
F6	End wide
F8	Subscript
F9	Superscript
FA	Paragraph break
FB	Figure break
FC	Page break
FD	Tabstop break
FF	Backspace

3.11 THE NFPRINT PROGRAM

The file NFPRINT.C contains a "no frills" version of the WORDPIC PRINT program. It implements only those features which are identical on virtually all printers. The other features normally in the PRINT program are either ignored, or translated into a similar feature which can be implemented. Here is a list of how the NFPRINT program handles these other features.

1. The special printing codes for UNDERLINE, BOLD, WIDE, SUBSCRIPT, and SUPERSCRIPT are simply ignored.

2. The TYPE selection on paragraph break lines are ignored. The printer will print in whatever pitch it is currently set.

3. Figure break lines are ignored. Nothing will be printed for them, i.e., no space is skipped.

4. The BACKUP command on paragraph break lines are ignored.

5. The BACKPAGE command on page break lines are ignored.

6. The LPI setting on page break lines are ignored. The printer will print in whatever lines per inch it is currently set.

7. A setting of 1.5 for SPACING on a paragraph break line will be treated the same as a setting of 1 for spacing.

8. Selecting proportional justification on a paragraph break line will be treated as if it were flush justification.

9. The OFFSET command on a paragraph break line will print 1 space for each tenth of an inch specified. The amount of the offset depends on the width of the space character in the current pitch setting of the printer.

To use the NFPRINT program with WORDSHELL, it must be renamed to PRINT.C. If the disk already has a program called PRINT.C, you will have to rename it to something else first. For example, the following commands will rename the PRINT.C file to FULLPRINT.C and NFPRINT.C to PRINT.C on the disk in drive 0:

```
RENAME PRINT FULLPRINT
RENAME NFPRINT PRINT
```

3.12 USING WORDPIC FILES WITH OTHER PROGRAMS

Files generated with WORDPIC are ordinary sequential ASCII text files and may readily be processed with other programs including the standard MTU Editor and BASIC. For example, a simple BASIC program can be written which will merge a mailing list with a letter produced by WORDPIC to produce individualized letters. Codes embedded by WORDPIC can be located by other programs, allowing information to be "cut in" with a minimum of programming effort.

As with all MTU software, the user is free to make an unlimited number of backup copies of the WORDPIC program. The WORDPIC program can be copied onto disks with other programs and data files and is completely compatible with other software.

4. WORDSHELL

An alternate way of accessing WORDPIC is through WORDSHELL. The WORDSHELL program allows you to by-pass CODOS and use WORDPIC as you would a dedicated word processor. It eliminates the need to know anything about the computing functions of the MTU-130 in using WORDPIC. Even the most sophisticated user will find that the convenience of WORDSHELL will lead to its continuous use.

Using WORDSHELL should be self-explanatory, for the most part. Until you become familiar with WORDSHELL, read each prompt before proceeding. The following information will help you learn how to use WORDSHELL more quickly.

NOTE: WORDSHELL is a trademark of Micro Technology Unlimited.

To start up WORDSHELL, after CODOS>, enter:

WORDSHELL

This will load and begin execution of WORDSHELL. When WORDSHELL begins running, it will format the CRT display into three areas known as windows. The top two lines of the display represent a Command Window where prompts indicate the next step. Below the Command Window is the File Window. In this 20 line window, an alphabetized list of text and graphic files will be displayed. Graphics files are distinguished from text files by their ".G" extension. Text files, however, will not display their ".W" extension in the File Window. There is also a highlighted field which can be moved around in the File Window. Below the File Window is the one line Status Window which displays the number of word processing files, graphics files, and the percentage of space free on the disk.

Once WORDSHELL is running, you perform the desired operation by pressing the appropriate function key. Some functions, such as EDIT and PRINT, require that you first select the file to be worked on. To select a file, simply position the highlighted field in the File Window on the desired file name using the cursor keys. When you press the desired function key, a dialogue of prompts will begin in the Command Window for the file you selected.

As you become familiar with WORDSHELL, you will notice that one of the possible responses to prompts in the dialogue for a selected function is CANCEL. This option is available should you change your mind or make a mistake. When you press CANCEL, you are returned to a previous point in the dialogue or back to a previous set of legends. The set of legends displayed for a given function are the menu for that function. When you are asked to enter a file name or page number, you must enter your response and press RETURN. Pressing RETURN with no input will be taken as a request to abort and return you to a previous point in the dialogue just as when you press the "CANCEL" function key. You also have the option of pressing the "Y" or "N" key when the "YES" and "NO" legends display instead of pressing the YES or NO function key. In like manner, when "DISK 0" and "DISK 1" legends display, you may press "0" for "DISK 0", "1" for "DISK 1" rather than the function key.

WORDSHELL allows you to change disks but only when it is safe to do so. The only time WORDSHELL permits you to change the disk in drive 0 is when you are prompted to do so during the DISK CHANGE function. As long as drive 0 is the current drive (the file window is displaying files from the disk in drive 0), it is safe to change the disk in drive 1. If drive 1 is the current drive, you are only permitted to change disks in drive 1 during the DISK 1 function. If you are copying from drive 0 to drive 1, you will be given the chance to place the desired disk in drive 1. If you open or close a disk drive door when it is not allowed, WORDSHELL will detect it and issue an error message. You will then be prompted to press RETURN so WORDSHELL can abort to a previous menu.

WORDPIC[tm] WORD PROCESSOR

WORDPIC is Micro Technology Unlimited's full-featured word processor for the MTU-130 computer. We call it WORDPIC because you can print words and pictures. What other word processor can do this:

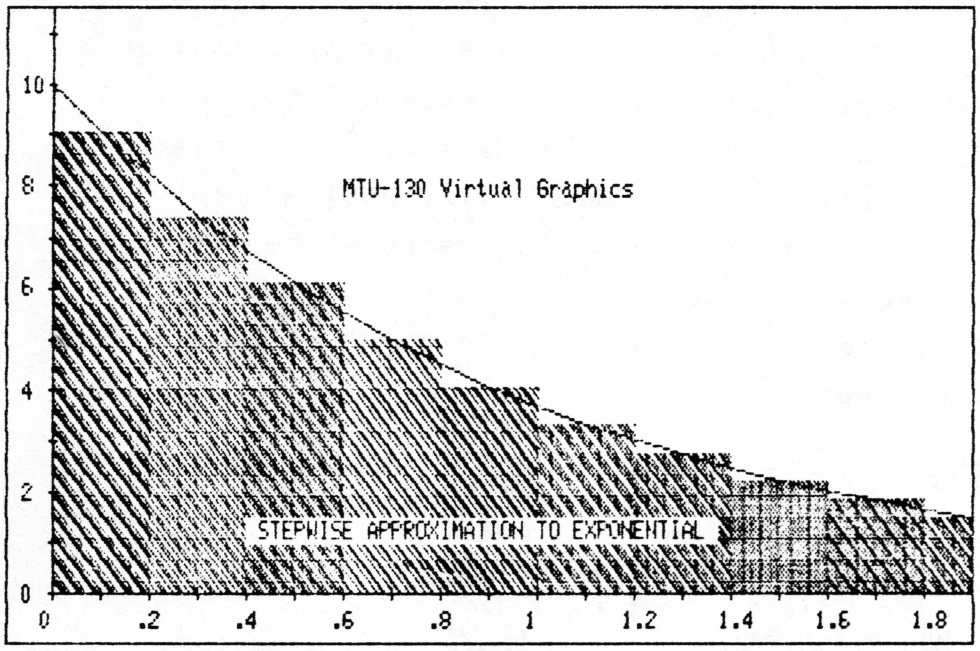


Figure 1: Graph of

$Y = e^{-\theta X}$

with an approximating step function used to compute the area,

$A = \Sigma_1^n \Delta x_i Y_{mid}$

With WORDPIC you can create and modify documents of any documents of any size rapidly and easily. Because of our strong emphasis on human engineering during the design of this program, WORDPIC is extremely easy to use. The word processor uses a "full screen editing" technique, which means that the text displayed on the CRT during editing appears virtually the same as it will on the final printed document. The function keys on the MTU-130 are used issue editing commands, so that there is no need to memorize complex control-key or escape-key sequences to edit text.

Unlike other word processors which limit document size to only a few hundred lines or less, WORDPIC can edit documents of up to 1,000,000 characters. Any portion of the document can be rapidly selected for display using automatic, bi-directional "infinite scrolling". The MTU-130 displays full 80-character lines, with the ability to edit lines of up to 160 characters. The full ASCII character set is displayable, including lower case letters with descenders. Special characters available on your printer such as Greek letters or math symbols are displayed, too.

An interrupt-driven keyboard allows type-ahead and insures no lost keystrokes and no keyboard "bounce" no matter how fast you type. The keys on a separate "cursor cross" keypad move the cursor rapidly and accurately on the screen. The cursor control keys repeat automatically after a brief delay when held down, and multiple cursor keys can be held down for diagonal movements. More evidence of the human engineering in the keyboard area is the presence of handy INSERT and DELETE keys on the main keyboard, which allows rapid editing for beginner or expert alike.

Text entry can be accomplished in either insert or overstrike mode. In insert mode, entered text "pushes" existing text on the line to the right as it is entered. Overstrike mode is used to replace existing text. In either mode, "word-wrap" automatically brings overflowing text on a line down to the next line without breaking the text in mid-word. Both left and right margins can be varied as often as desired within the document. The JUSTPARA function key immediately justifies text on screen between the margins. If margins are reduced or expanded, the JUSTPARA key will automatically "funnel" or "expand" the text as needed to fit between the new margins.

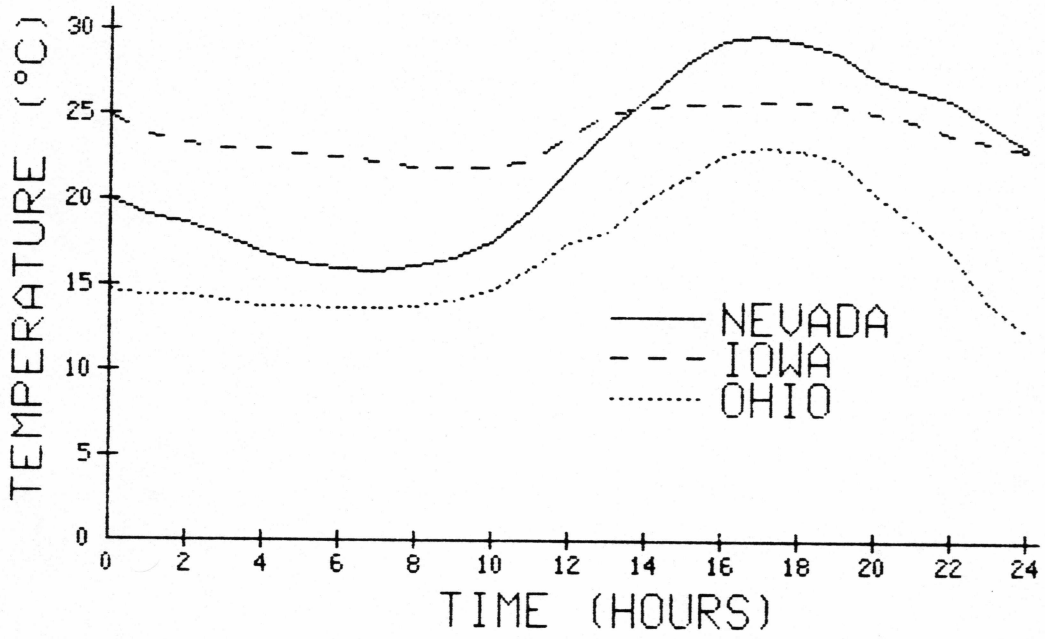
Tabstops are easily set using the TABSTOP function key. Tabstops may be altered any number of times within the document. Tabstops and margin positions are stored with the document and are recalled automatically as you scroll through the file. The current tabstop and marign settings are shown graphically at all times. Lines may be centered using the CENTER function key.

WORDPIC can search for strings of text and can perform global or limited search and replace operations. These searches can be limited to specified columns or line ranges. You can specify a repeat constant for multiple replacements, and can specify if you want a chance to "veto" each replacement before it is made. Block DELETE, COPY, MOVE, SAVE, and RECALL operations can be performed on multiple lines of text. A block accidently deleted can be recalled. Blocks of text can be written to other files, and other files can be inserted at will. You can even "teach" WORDPIC new editing operations as a sequence of keystorkes, defined as a "macro".

WORDPIC fully supports the capabilites of modern dot matrix and daisy wheel printers. You can specify underlining, subscripts, superscripts, bold and wide characters. You can mix pica, elite, condensed, and proportional printing within the same document. You can mix "as is", "flush" or "proportional" justification, and alter line spacing, too. Most important, WORDPIC displays indications of all these special modes on the screen while you are editing. You don't have to print out the document to find out where these printing modes change, because you can see and edit them right on the screen. You may take full advantage of printers with extended character sets (such as Greek or math symbols) with WORDPIC, too, for example:

$$R = \rho[\ \Sigma(1-\Psi)^2 + 2\pi\Theta(\Delta x)^3 - \Phi\ ]$$

$$X=\Sigma x_1^{1-\lambda}+\varepsilon K$$

You can use features such as w i d e p r i n t, underlining, and ~~overstrike~~, too.

A truly unique feature of WORDPIC is the ability to include figures as well as text. Figures may include any type of graphics image such as tables, graphs, digitized photographs, or MTU-130 screen images. These are stored in separate files and are printed out with the text. Figures may be inserted, moved, and deleted, too. Imagine the impact of being able to directly include graphs and figures in your reports and letters!